

IN THE CLAIMS

Cancel Claims 1-14.

Add new claims 15-38.

15. A particle blast apparatus, comprising:

- (a) a hopper for receiving particles for introduction into a flow of transport gas; and
- (b) a device to impart energy to said hopper, said device carried by said hopper.

16. The particle blast apparatus of claim 15, wherein said device is carried by said hopper.

17. The particle blast apparatus of claim 15, comprising a frame, said frame supporting said hopper, said hopper not being rigidly supported by said frame.

18. The particle blast apparatus of claim 15, wherein said hopper comprises an exit, and wherein said device is carried by said hopper adjacent said exit.

19. The particle blast apparatus of claim 15, wherein said particles are cryogenic particles and said apparatus is configured to introduce said particles into the flow of transport gas.

20. The particle blast apparatus of claim 15 or 19, wherein said device comprises an impulse assembly.

21. The particle blast apparatus of claim 20, wherein said impulse assembly comprises at least one member which is reciprocated between first and second positions.

22. The particle blast apparatus of claim 21, wherein said at one member reciprocates along a linear axis.

23. The particle blast apparatus of claim 22, wherein said axis is horizontal.

24. The particle blast apparatus of claim 20, wherein said impulse assembly is carried by said hopper.

25. The particle blast apparatus of claim 15 or 19, wherein said device comprises a vibrator.

26. The particle blast apparatus of claim 25, wherein said vibrator comprises an axis of rotation and said hopper comprises an inclined wall, said axis being parallel to said inclined wall.

27. The particle blast apparatus of claim 25, further comprising an impulse assembly configured to impart energy to said hopper, said impulse assembly including at least one member which is reciprocated between first and second positions.

28. The particle blast apparatus of claim 27, wherein said impulse assembly is carried by said hopper.

29. A method of imparting energy to a hopper of a particle blast apparatus, comprising the steps of:

- a. substantially continuously applying vibrational energy to said hopper;
- and
- b. periodically applying impulse energy to said hopper.

30. A method of flowing cryogenic particles from a hopper into a flow of transport gas, comprising the steps of:

- a. actuating the flow of cryogenic particles;
- b. delivering an impulse to the hopper upon actuation of the flow of cryogenic particles;
- c. deactuating the flow of cryogenic particles; and
- d. delivering an impulse to the hopper upon deactuation of the flow of cryogenic particles.

31. The method of claim 30, wherein the step of actuating the flow of cryogenic particles comprises the step of actuating a switch, and wherein the step of deactuating the flow of cryogenic particles comprises the step of deactuating said switch.

32. The method of claim 31, wherein the step of delivering an impulse to the hopper upon actuation of the flow of cryogenic particles is executed by the step of actuating said switch.

33. The method of claim 31, wherein the step of delivering an impulse to the hopper upon deactuation of the flow of cryogenic particles is executed by the step of deactuating said switch.

34. The method of any of claims 30-33, comprising the step of delivering impulses to the hopper after actuating the flow of cryogenic particles at periodic time intervals.

35. The method of claim 34, wherein said periodic time intervals are equal.

36. The method of claim further comprising the step of substantially continuously applying vibrational energy to said hopper.

37. A method of flowing cryogenic particles from a hopper into a flow of transport gas, comprising the steps of:

- a. actuating the flow of cryogenic particles;
- b. deactuating the flow of cryogenic particles; and
- c. substantially continuously applying vibrational energy to said hopper following the step of actuating the flow of cryogenic particles.

38. The method of claim 37, wherein the step of substantially continuously applying vibrational energy to said hopper is stopped upon execution of the step of deactuating the flow of cryogenic particles.